Enclosure

RL/REG-98-05
Revision 4

INSPECTION PROGRAM DESCRIPTION FOR THE REGULATORY OVERSIGHT OF THE RPP-WTP CONTRACTOR

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Office of Safety Regulation

U.S. Department of Energy
Office of River Protection
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Preface

As directed by Congress in Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*, the U.S. Department of Energy (DOE) established the Office of River Protection (ORP) at the Hanford Site to manage the River Protection Project (RPP), formerly known as the Tank Waste Remediation System. ORP is responsible for the safe storage, retrieval, treatment, and disposal of the high level nuclear waste stored in the 177 underground tanks at Hanford.

The initial concept for treatment and disposal of the high level wastes at Hanford was to use private industry to design, construct, and operate a Waste Treatment Plant (WTP) to process the waste. The concept was for DOE to enter into a fixed-price contract for the Contractor to build and operate a facility to treat the waste according to DOE specifications. In 1996, DOE selected two contractors to begin design of a WTP to accomplish this mission. In 1998, one of the contractors was eliminated, and design of the WTP was continued. However, in May 2000, DOE chose to terminate the privatization contract and seek new bidders under a different contract strategy. In December 2000, a team led by Bechtel National, Inc. was selected to continue design of the WTP and to subsequently build and commission the WTP.

A key element of the River Protection Project Waste Treatment Plant (RPP-WTP) is DOE regulation of safety through a specifically chartered, dedicated Office of Safety Regulation (OSR). The OSR reports directly to the ORP Manager. The regulation by the OSR is authorized by the document entitled *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor* (DOE/RL-96-25) (referred to as the Policy) and implemented through the document entitled *Memorandum of Agreement for the Execution of Radiological, Nuclear, Process Safety Regulation of the RPP-WTP Contractor* (DOE/RL-96-26) (referred to as the MOA). These two documents provide the basis for the safety regulation of the RPP-WTP at Hanford.

The foundation of both the Policy and the MOA is that the mission of removal and immobilization of the existing large quantities of tank waste by the RPP-WTP Contractor must be accomplished safely, effectively, and efficiently.

The Policy maintains the essential elements of the regulatory program established by DOE in 1996 for the privatization contracts. The MOA clarifies the DOE organizational relationships and responsibilities for safety regulation of the RPP-WTP. The MOA provides a basis for key DOE officials to commit to teamwork in implementing the policy and achieve adequate safety of RPP-WTP activities.

The Policy, the MOA, the RPP-WTP Contract, and the four documents incorporated in the Contract define the essential elements of the regulatory program being executed by the OSR. The four documents incorporated into the Contract (and also in the MOA) are as follows:

Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor, DOE-96-0005,

DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor, DOE/RL-96-0003,

Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor, DOE/RL-96-0006, and

Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor, DOE/RL-96-0004.

DOE patterned its safety regulation of the RPP-WTP Contractor to be consistent with the concepts and principles of good regulation (reliability, clarity, openness, efficiency, and independence) used by the Nuclear Regulatory Commission (NRC). In addition, the DOE principles of integrated safety management were built into the regulatory program for design, construction, operation, and deactivation of the facility. The regulatory program for nuclear safety permits waste treatment services to occur on a timely, predictable, and stable basis, with attention to safety consistent with that which would occur from safety regulation by an external agency. DOE established OSR as a dedicated regulatory organization to be a single point of DOE contact for nuclear safety oversight and approvals for the WTP Contractor. The OSR performs nuclear safety review, approval, inspection, and verification activities for ORP using the NRC principles of good regulation while defining how the Contractor shall implement the principles of standards-based integrated safety management.

A key feature of this regulatory process is its definition of how the standards-based integrated safety management principles are implemented to develop a necessary and sufficient set of standards and requirements for the design, construction, operation, and deactivation of the RPP-WTP facility. This process meets the expectations of the DOE necessary and sufficient closure process (subsequently renamed Work Smart Standards process) in DOE Policy 450.3, *Authorizing Use of the Necessary and Sufficient Process for Standards-based Environment, Safety and Health Management*, and is intended to be a DOE approved process under DOE Acquisition Regulations, DEAR 970.5204-2, *Laws, Regulations and DOE Directives*, Section (c). DOE approval of the contractor-derived standards is assigned to the OSR.

The RPP-WTP Contractor has direct responsibility for WTP safety. DOE requires the Contractor to integrate safety into work planning and execution. This integrated safety management process emphasizes that the Contractor's direct responsibility for ensuring that safety is an integral part of mission accomplishment. DOE, through its safety regulation and management program, verifies that the Contractor achieves adequate safety by complying with approved safety requirements.

RECORD OF REVISION

Document Title: Inspection Program Description for the Regulatory Oversight of the RPP-WTP Contractor

Document Number: RL/REG-98-05

Revision Date	Revision Number	Reason for Revision
01/98	0	Issued
07/98	1	Revised to reflect the resolution of BNFL comments.
10/98	2	Revised to reflect changes made to administrative aspect of the inspection program and changes to description of planned design phase inspections.
07/99	3	Revised to reflect administrative changes and introduce the construction inspection program, including limited construction inspection areas.
04/01	4	Revised to reflect OSR reporting changes to ORP and procedural changes occurring from changing from privatization to fixed-price contract.

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1.0 INTRODUCTION

The Regulatory Program for the River Protection Project Waste Treatment Plant (RPP-WTP), as described, in part, in DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, requires the U.S. Department of Energy (DOE), Office of River Protection (ORP) to conduct regulatory oversight (inspection). The Office of Safety Regulation (OSR), an organizational element of ORP, administers this regulatory program. Regulatory oversight, while focused on production operations, extends to all safety-related Contractor activities that are performed pursuant to formal OSR regulatory actions.

The OSR Inspection Program, described in this Inspection Program Description (IPD) and implemented in accordance with RL/REG-98-24, *Inspection Program Implementation Plan* (IPIP), encompasses the definition, implementation, and execution of the regulatory oversight function in accordance with the mandates for an inspection function that are stipulated in DOE/RL-96-25, *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*; DOE/RL-96-26, *Memorandum of Agreement for the Execution of Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*; and the Contract. The IPD documents the authority for the program and describes the purpose, general nature, objectives, and scope of the OSR Inspection Program. The approach to implementing the IPD is described in terms of strategy, general features, and specific elements. The program content is presented in terms of inspection procedures.

The IPD is structured to address all phases of the Contractor's activities. The phases include design, construction,[1] operations, and deactivation. The inspection program for the design and construction phases has been developed (with the exception of pre-operational testing inspections). The remaining inspection procedures will be developed incrementally as the RPP-WTP activities proceed.

Regulation of the RPP-WTP Contractor in the area of radiological, nuclear, and process safety is performed under the authority of the RPP-WTP Contract[2] except for a limited number of regulations promulgated by the DOE under the *Administrative Procedures Act*. The RPP-WTP regulatory program and its elements, which are incorporated into the Contract, are described in the following four documents: DOE-96-0005, *Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant*

[1] The construction phase of the OSR Inspection Program includes oversight of all activities authorized under a Limited Construction Authorization Agreement (LCAA) or Construction Authorization Agreement (CAA). These activities include limited construction, construction, and pre-operational testing.
[2] Contract DE-AC27-01RV14136 between DOE and Bechtel National, Inc., dated December 11, 2000.

Contractor; DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor;* and DOE/RL-96-0004, *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor*. An overall perspective of the regulatory approach in the context of the RPP-WTP Program is shown in Figure 1.

The project's first regulatory action was Standards Approval (SA). The purpose of this action was to provide an adequate and acceptable safety basis (safety technical approach and safety management practices) for design and the projected construction, operation, and deactivation. The Contractor's SA submittal consisted of the following six documents: the Quality Assurance Plan; Integrated Safety Management Plan; the Safety Requirements Document; the Radiation Exposure Standard for Workers Under Accident Conditions; the Hazards Analysis Report; and the Employee Concerns Program. In completing this regulatory action, the OSR approved quality program requirements, the set of radiological, nuclear and process safety standards for the WTP and the Contractor's standards-based integrated safety management approach and safety management practices. This approval process ensured compliance with applicable laws and regulations, conformance with the DOE-stipulated top-level safety standards and principles, and achievement of adequate safety.

The project's second regulatory action was approval of Contractor's Initial Safety Assessment (ISA). This action assessed the capability of the Contractor's waste processing approach to achieve subsequent authorizations for construction, operation, and deactivation allowing DOE to obtain perspective on the regulatory risks associated with the Contractor's submittals.

The OSR began inspection of the RPP-WTP Contractor following approval of the ISA and will continue with its oversight through deactivation.

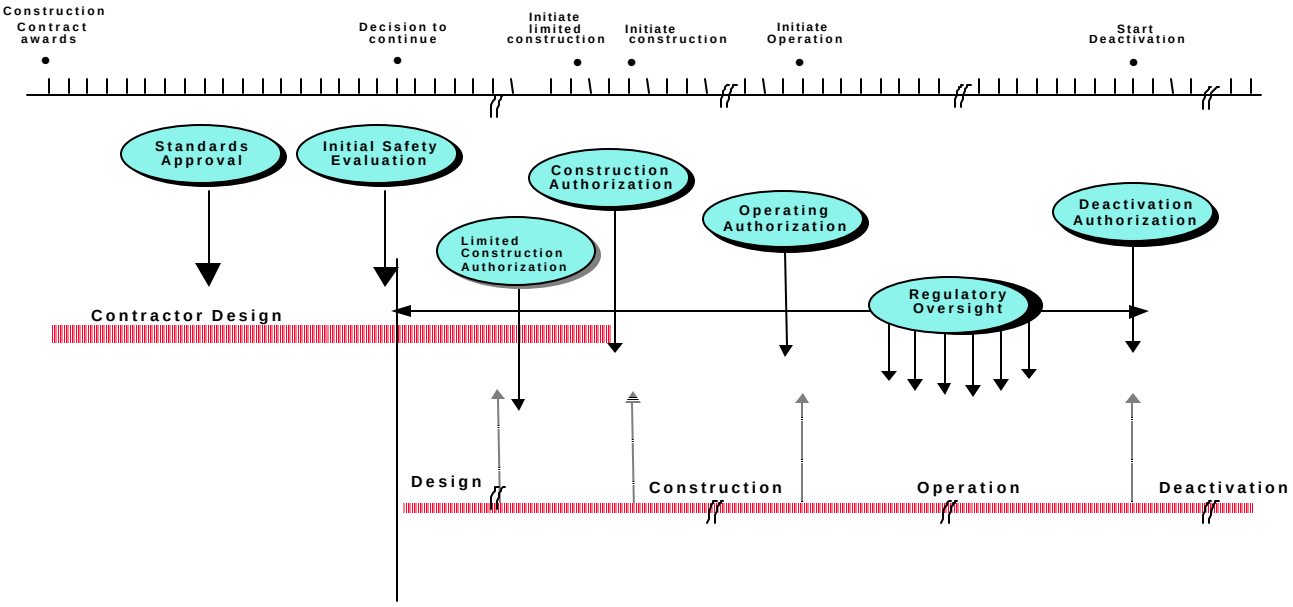


Figure 1. Overall Perspective on the RPP-WTP Regulatory Approach

2.0 PURPOSE

The OSR Inspection Program purposes are: (1) to confirm Contractor performance to the authorization basis and Contract in the area of radiological, nuclear, and process safety; (2) to ensure timely identification and implementation of corrective actions,[3] and (3) to develop independent inputs for subsequent regulatory authorizations or actions,[4] thereby fostering regulatory efficiency.

These purposes are consistent with the policy statement[5] for the regulation of the RPP-WTP Contractor, which states that the Contractor be regulated in a manner that ensures adequate safety by application of regulatory concepts and principles consistent with those of the U.S. Nuclear Regulatory Commission (NRC). These purposes also are consistent with the other regulatory mandates of DOE/RL-96-25 and of DOE/RL-96-26 for regulation of the RPP-WTP Contractor.

3.0 SUMMARY

The OSR Inspection Program is based on the Contractor being directly responsible for the safety of its activities and that the OSR's function is to ensure, on behalf of ORP, that the Contractor fully discharges its safety responsibility. Consistent with the concepts and principles of the NRC's regulatory approach, the OSR is fulfilling its function through a full-scope regulatory program.[6] This involves the approval of Contractor-selected safety requirements, formal ORP authorization of Contractor activities, inspection to evaluate Contractor safety performance, and stimulation of corrective actions as necessary to align Contractor performance with Contract expectations. Inspection is the continuing element of the RPP-WTP Regulatory Program that facilitates the efficient and effective performance of the other elements, most of which occur only once at specific stages of the Contractor's endeavor. Therefore, the inspection function is defined to be consistent with and tightly linked to the other elements.

An effective inspection program ensures that the Contractor achieves the desired levels of safety for facility workers, co-located workers, Tribal Nations, and the public through proper design, proper fabrication and construction, adequate testing, controlled operations, and responsible management oversight. Therefore, the OSR Inspection Program has a life-cycle scope, initiated during design and continuing throughout construction, operation, and deactivation. It has the capability to incorporate evolving knowledge and understanding of the work, associated hazards, and appropriate hazards controls. It also has routine elements that provide continuing accountability for, and assurance of, effective and adequate Contractor performance of safety and special elements that respond to specific events or conditions (e.g., incidents, unusual events, allegations, etc.).

[3] DOE/RL-96-26, Section 2.2.3, item e.1, p. 2.
[4] Ibid, item a.
[5] DOE/RL-96-25, Section 2.
[6] Ibid, Section 6.

For efficiency and effectiveness, the OSR Inspection Program does not replace the Contractor's self-assessment program but rather builds on its effectiveness. The program encourages self-identification, self-reporting, and self-correction of safety issues and non-compliances. It ensures that the Contractor's self-assessment program (1) is continually and comprehensively implemented; (2) employs competent, qualified personnel to provide assessment quality and integrity both in technical and management matters (understanding of the work, hazards, controls, and associated standards); (3) documents, analyzes, and dispositions findings appropriately, including prompt reporting to the OSR, if required; and (4) implements needed corrective actions in a timely manner.

To further efficiency and effectiveness, the OSR Inspection Program also focuses on areas of greatest safety significance while relying on a planned approach to ensure that the balance of the Contractor's safety performance is addressed. The OSR's tailored approach to inspection is based on an understanding by the OSR of the Contractor's work, the nature and level of the associated hazards, technical approaches to controlling the hazards (including standards for effecting the control), and the Contractor's management processes (particularly self-assessment). The program concentrates inspection on areas where there are indications of lagging Contractor safety performance and reduces the inspections where the Contractor's safety performance is strong and the Contractor's self-assessment program is effective.

Consistent with the openness principle[7] under which the OSR operates, inspection findings and actions are based on objective, unbiased assessment of information--documented with reasons explicitly stated--and fully available to the public. To accomplish this, the OSR Inspection Program requires the utilization of competent personnel; has specific functions to document, analyze, categorize, and disposition inspection findings; and has an approach for establishing a documented record of inspection performance.

Consistent with the principle of clarity,[8] direct and clear expectations for the OSR Inspection Program have been documented. The program is defined to the level of specific inspection areas in the IPD. It is defined further in terms of specific inspection procedures, as well as scope and schedule in the IPIP. This information is available to the Contractor and the public to enhance its full understanding of the OSR Inspection Program. In developing these inspection details, the OSR adapted the proven approaches and techniques of the NRC.

4.0 AUTHORITY

The authority for DOE oversight of Contractor radiological, nuclear, and process safety derives from nuclear safety requirements[9] and the Contract. The Contract provisions associated with radiological, nuclear, and process safety oversight address the implementation of an inspection program throughout the RPP-WTP project lifecycle. DOE/RL-96-26 assigns the responsibility and authority for radiological, nuclear, and process safety oversight of the RPP-WTP Contractor

[7] DOE/RL-96-25, Section 4, item 2.
[8] DOE/RL-96-25, Section 2.2.4.
[9] 10 CFR 820, "Procedural Rules for DOE Nuclear Activities," describes DOE investigation and inspection authority as it relates specifically to DOE nuclear safety requirements.

to the ORP Manager. DOE/RL-96-26 specifies that the ORP Manager responsibility for radiological, nuclear, and process safety oversight is executed through the OSR, which is a dedicated ORP organizational unit under the Safety Regulation Official (SRO). These responsibilities are detailed in ORP M 411.1-1, "Safety Management Functions, Responsibilities, and Authorities Manual for the U.S. Department of Energy, Office of River Protection."[10] This document details how the OSR discharges its assigned responsibility to conduct a radiological, nuclear, and process safety inspection program within the provisions of the Contract.

4.1 Inspection Program Authority

Included within the Contract are four documents (DOE/RL-96-0003, DOE/RL-96-0004, DOE/RL-96-0005, and DOE/RL-96-0006) that define the approach for regulation of the RPP-WTP Contractor. These documents provide mandates for the OSR inspection program as well as an agreed upon (between ORP and the Contractor) implementation basis for the program. From these documents, the SRO is responsible for the following:

- Implementing a comprehensive safety regulation process, which includes safety oversight.[11]
- Confirming[12] that the Contractor's activities are performed safely and within approved limits.
- Providing for continuing regulatory oversight[13] and enforcement action.
- Maintaining a continuing interaction[14] with the Contractor to ensure that the Contractor is meeting the safety conditions of its Contract and the conditions of DOE approvals, namely compliance with applicable laws and legal requirements, and conformance to the DOE-stipulated top-level safety standards and principles.
- Providing oversight[15] to ensure that the Contractor's operations are in continued compliance with agreements.
- Performing on-location inspections[16] to support the regulatory oversight function.
- Monitoring the operation[17] of the Contractor's facility to ensure that the authorization basis and the conditions in the authorization agreement are not violated.

[10] ORP M 411.1-1, Section 5.1.9.
[11] DOE/RL-96-0003, Section 3.2.
[12] DOE/RL-96-0005, Section 2.
[13] Ibid.
[14] DOE/RL-96-0003, "Preface."
[15] Ibid, Section 1.
[16] Ibid, Section 3.1.
[17] Ibid, Section 3.3.5.

- Performing regulatory oversight[18] aimed at ensuring that the Construction Authorization Agreement (CAA), which includes the Limited Construction Authorization Agreement (LCAA), is not violated and that formal amendment processes are executed.

- Executing an oversight process[19] during all phases of the RPP-WTP project for determining that the authorization basis and the authorization agreement are not violated.

- Performing regulatory oversight[20] aimed at ensuring that the Deactivation Authorization Agreement (DAA) is not violated and that formal amendment processes are executed.

In summary, the ORP Manager has given authority to the SRO to implement an inspection program that:

- Is consistent in concept and principle with that of the NRC

- Includes on-location elements

- Addresses adherence to authorization agreements

- Is proactive

- Addresses performance in meeting safety requirements and commitments

- Extends to Contractor's suppliers

- Supports corrective actions

- Is focused within the OSR

- Extends to investigation of off-normal events

- Confirms that activities are being conducted safely

- Confirms that activities are being conducted within approved limits

- Is of a continuing nature

- Ensures that safety conditions of the Contract are met

- Ensures that conditions of DOE-ORP approvals are met (includes SRD, ISMP, Quality Assurance Program [QAP], Radiation Protection Program [RPP], and Employee

[18] Ibid, Section 4.3.3.
[19] Ibid, Section 4.5.1.
[20] Ibid, Section 4.6.3.

Concerns Program [ECP])

- Ensures compliance with applicable laws and legal requirements
- Ensures conformance to the DOE-ORP stipulated top-level safety standards and principles
- Ensures continued compliance with the authorization agreements
- Includes elements associated with design
- Includes elements associated with construction (including limited construction and pre-operational testing)
- Includes elements associated with operations
- Includes elements associated with deactivation
- Supports the authorization amendment process.

4.2 Inspection Program Implementation Authority

The Contract provides the authority under which the OSR Inspection Program is implemented. It assigns DOE as the regulator[21] for radiological, nuclear, and process safety with the expressed purpose of ensuring that the Contractor provides for safe and healthy conditions for employees and all other persons under the Contactor's control who work in the general vicinity of the Contractor's site, including subcontractors. This DOE regulatory function necessitates an inspection program. The DOE regulatory oversight function, specified under the Contract, is embodied in the following clauses.

- Contract Section C.3 (b) – "As the Owner, DOE will (iv) Perform design, construction and operability oversight of the WTP, and where required, engage other contractors to provide design and construction and operability oversight of the WTP."
- Contract Section C.4 (C)(3) – "DOE will oversee all Contractor performance in accordance with a Contractor-developed DOE-approved program. The Contractor shall develop and implement an integrated WTP specific quality assurance (QA) Program, supported by documentation that describes overall implementation of QA requirements."
- Contract Section C, Standard 7, paragraph (e)(3)(vi) – "DOE or its designee(s) shall have access to, and the right to conduct assessments, audits, and or surveillance of the Contractor (and its subcontractors/suppliers, at any level) activities to ensure compliance

[21] Contract DE-AC27-01RV14136, Section C.6, Standard 7.e (2), "Radiological, Nuclear, and Process Safety."

with the appropriate requirements and the Contractor's QA program, at DOE discretion."

Although these clauses directly apply to products (immobilized wastes, specific separated materials, etc.) and waste processing services, the safety deliverables specified in the Contract are products as well, and the implementation of a safety management program that provides adequate safety is a key element of the services provided under the Contract. Thus, these clauses apply to safety products and services and provide the right to implement the OSR Inspection Program.

The agreed-upon (between ORP and the Contractor) characteristics of the program are as summarized in Section 3.0 of this IPD.

Consistent with the implementation authority set forth in the Contract and consistent with the need for independent collection of information, the OSR inspectors are expected to have uninhibited access to the Contractor's facilities during the performance of inspection activities. This access is to be equivalent to that provided to Contractor employees following proper identification and compliance with applicable access control measures for security, radiological and hazardous chemical protection, and personal safety.

5.0 OBJECTIVES

The overall objectives of the OSR Inspection Program are listed in this section. Specific objectives associated with each portion of the life cycle of the RPT-WTP Project are described in the life-cycle sections of the IPIP. These overall objectives are consistent with the mandates for the OSR Inspection Program as expressed in DOE/RL-96-25 and DOE/RL-96-26, the implementation of the OSR Inspection Program as expressed in the Contract, and the concepts and principles of the NRC's inspection program. The objectives are as follows.

1. Assess the Contractor's overall performance with regard to safety.[22,23,24]

2. Identify conditions that may adversely affect the safety of facility workers, co-located workers, Tribal Nations, or the public.[25,26,27,28]

3. Provide objective, independent evidence of the Contractor's continuing compliance with approved standards and requirements, conformance with top-level safety standards and principles, and fulfillment of commitments embodied in approved documents such as the

[22] DOE/RL-96-26, Enclosure A, Section 2.2.
[23] NRC Inspection Manual, Chapter 0030, Section 0030-06, item c.
[24] DOE/RL-96-0005, Section 2.
[25] Contract DE-AC27-01RV14136, Section C.2.
[26] NRC Inspection Manual, Chapter 0030, Section 0030-06, item b.
[27] Contract DE-AC27-01RV14136, Section H-27.
[28] DOE/RL-96-0005, Section 2.

ISMP.[29,30,31,32]

4. Provide objective, independent evidence of the Contractor's implementation and fulfillment of authorization agreements.[33,34,35,36,37,38]

5. Provide objective, independent evidence that the Contractor is meeting the safety requirements of the Contract (requirements in the documents that define the regulatory approach) and the conditions of any OSR approvals.[39,40]

6. Provide an objective, independent basis for ORP actions such as stop work, resumption of work, revocation of an authorization, or reinstatement of an authorization.[41,42]

7. Provide objective, independent input to OSR and/or ORP approvals, authorizations, and authorization amendments.[43]

8. Provide objective, independent verification that corrective actions are being adequately implemented and are effective in correcting safety deficiencies or non-compliances.[44]

9. Provide objective, independent verification of the integrity of the Contractor's documentation regarding activities and items relied on for safety, such as self-assessment reports, design descriptions, analyses, etc.[45,46,47]

10. Provide objective, independent verification that the Contractor's implementation and fulfillment of authorization agreements and OSR/ORP approvals (including any conditions contained therein), in combination with the Contractor's compliance with the safety requirements of the Contract, provide adequate radiological, nuclear, and process safety.

[29] DOE/RL-96-25, Section 5, item 5.
[30] NRC Inspection Manual, Chapter 0030, Section 0030-06, item d.
[31] DOE/RL-96-0005, Section 2.
[32] DOE/RL-96-0003, "Preface."
[33] DOE/RL-96-25, Section 6, item 7.
[34] NRC Inspection Manual, Chapter 0030, Section 0030-06, item d.
[35] DOE/RL-96-26, Enclosure A, Section 2.2.
[36] DOE/RL-96-0005, Section 2.
[37] DOE/RL-96-0003, Section 1.
[38] Ibid, Section 3.3.5.
[39] DOE/RL-96-26, Enclosure A, Section 2.2.
[40] DOE/RL-96-0003, "Preface."
[41] Contract DE-AC27-01RV14136, Section H.27.
[42] NRC Inspection Manual, Chapter 0030, Section 0030-06, item b.
[43] Ibid, item a.
[44] Ibid, item d.
[45] Contract DE-AC27-01RV14136, Section E.
[46] Federal Acquisition Regulations, Section 52.246-4.
[47] DOE/RL-96-0003, Section 4.5.1.

6.0 SCOPE

Consistent with the scope of the regulatory program for which the OSR has implementation responsibility, the scope of the OSR Inspection Program is limited to radiological, nuclear, and process safety. The scope addresses Contractor activities relied on for safety. This includes activities of Contractor team members, subcontractors, and suppliers, which are being executed pursuant to OSR regulatory actions (approvals, authorizations, agreements, commitments, etc.) throughout all life-cycle phases (design, construction–including limited-construction, pre-operational testing–production operation, and deactivation). DOE oversight and management of non-radiological worker safety and health is executed outside of the framework of this inspection program.

7.0 APPROACH

This section describes the approach employed by the OSR to perform the inspection function and the overall strategy of phased program development and implementation. The key features of the approach include (1) attributes that are mandated by DOE/RL-96-25 and DOE/RL-96-26 (including the documents defining the regulatory approach), (2) mechanisms of inspection, (3) tailoring considerations, (4) use of routine inspections, (5) use of special inspections, (6) use of on-location inspectors, and (7) modularization. The remainder of this section deals with specific elements of the approach to inspection execution such as protocols, planning, preparation, performance, documentation, evaluation, response, records, and tracking of results.

7.1 Strategy

The strategy for the inspection approach is phased development, implementation, and execution. This is consistent with the mandate in DOE/RL-96-26[48] to provide reliability and stability in the regulatory program through ensuring that regulatory activities are ready for implementation when needed. The phased approach permits the necessary elements of the OSR Inspection Program to be implemented and ready for execution as the Contractor's work undergoes major shifts in characteristics (e.g., design to construction). This approach also supports efficiency and effectiveness because the inspection procedures can be specifically tailored to address the safety-significant Contractor activities associated with each phase (using current knowledge of the safety characteristics of the facility and associated processing systems).

The schedule for the phased development, implementation, and execution of the OSR Inspection Program is shown in a generic manner in Figure 2. A generic schedule is used because the calendar-based schedules of the Contractor will be dynamic depending on the specific flow of the Contractor's work.

[48] DOE/RL-96-26, Section 3.1, p. 4, and Enclosure C, Section 2.3, item 2.

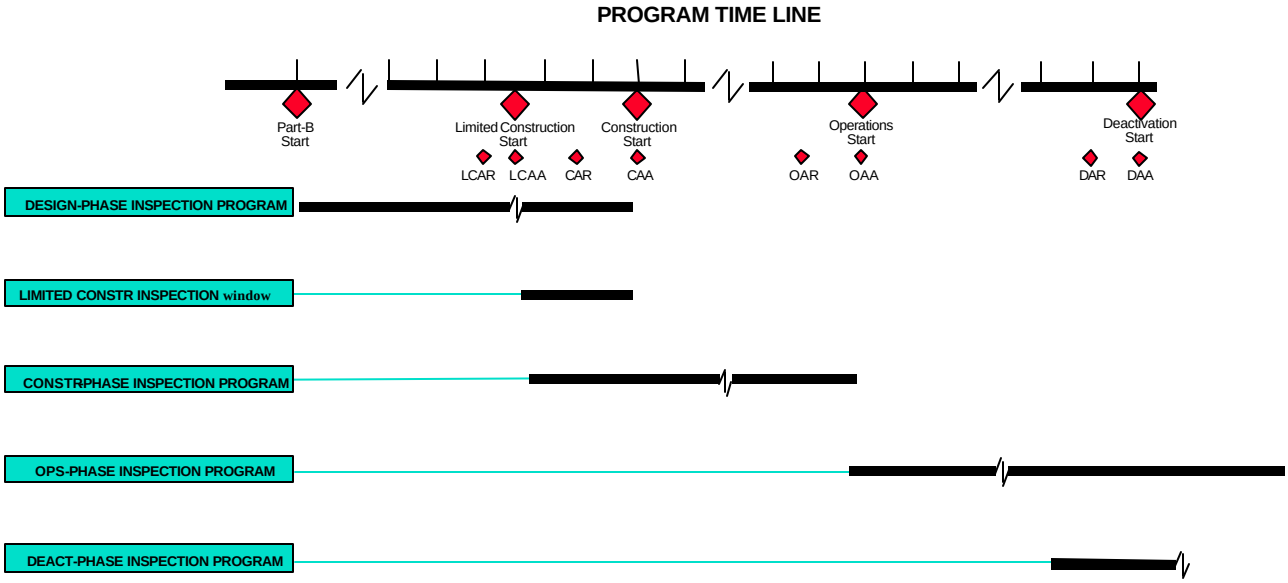
7.2 Key Features

The key features of the approach to inspection used in the OSR Inspection Program are consistent with those embodied in NRC inspection programs and have been validated through many years of NRC inspection activity. Also, they are consistent with the inspection expectations established for the inspection function by DOE/RL-96-25, DOE/RL-96-26, and the Contract.

7.2.1 Attributes

Inspection embodies specific attributes that ensure its credibility, efficiency, effectiveness, and consistency with regulatory expectations. On the basis of inspection program authority discussed in Section 4, the objectives defined in Section 5, and the experience of the NRC, these specific attributes are as follows.

- Inspections should be executed in a planned manner with appropriate preparation and procedures to ensure their efficiency and effectiveness.
- Trained and qualified lead inspectors should be used for efficient and effective performance of the inspections.
- Routine inspections, as well as special inspections, should be used as appropriate to meet the objectives of the program.



LCAA = Limited Construction Authorization Agreement
LCAR = Limited Construction Authorization Request
CAA = Construction Authorization Agreement
CAR = Construction Authorization Request
DAA = Deactivation Authorization Agreement
DAR = Deactivation Authorization Request
OAA = Operations Authorization Agreement
OAR = Operations Authorization Request

Figure 2. OSR Inspection Program Implementation Schedule

- Inspections that are tailored to the Contractor's work and flow of activities should have breadth (total areas addressed), scope (sampling within an area based on safety significance and previous Contractor performance), and frequency (for consideration of changes in the nature of the activities relied on for safety and previous Contractor performance).

- Inspections should be flexible to determine root causes of performance trends, not just identify symptoms.

- Inspection observations and assessments should be fully documented and added to the official regulatory record (i.e., docket).

- Inspection observations and assessments should be evaluated and characterized to facilitate a determination of overall Contractor performance and to facilitate appropriate OSR responses.

- Inspection issues should be tracked for follow-up and disposition.

- Inspection activities should be consistent with OSR internal policies and directives.

7.2.2 Mechanisms

Inspection embodies a proven set of mechanisms for performing the inspections. Appropriate mechanisms from this set are selected during the planning and preparation activities prior to each specific inspection consistent with the scope of the inspection and the items being addressed. The set is as follows:

- Document reviews involving Contractor program plans, manuals, procedures, instructions, technical reports, self-assessment reports, meeting minutes, records, data reports, event reports, etc.

- Briefings by, and discussions with, Contractor personnel on selected subjects as requested by the OSR and prearranged with the Contractor.

- Daily status meetings for team inspection (i.e., three or more inspectors) that have a scheduled duration of two weeks or longer.

- Interviews with Contractor personnel on selected subjects as requested by the OSR.

- On-location observation of Contractor operations and activities as requested by the OSR.

- Unannounced on-location observation of Contractor operations and activities by the OSR.

- Monitoring of equipment performance during operation, inspection, or testing.

- Witnessing of tests performed by the Contractor (equipment operability, instrument calibration, software characteristics, etc.) as well as performance of independent analyses of test results.

7.2.3 Tailoring

Inspection embodies tailoring of the inspection scope, depth, frequency, and character to achieve inspection effectiveness while also making efficient use of inspection resources. Consistent with NRC inspection philosophy, the OSR inspection function is focused in areas of Contractor performance of greatest safety significance. Tailoring of OSR inspection activities is based on the following considerations.[49] The considerations listed below are addressed in the preparation and planning activities prior to each specific inspection:

- Significance of particular activities, physical features of the systems and facility, and program and management controls in addressing the most significant identified hazards (based on the Contractor's hazards evaluations)

- Effectiveness of the Contractor's self-assessment activities in ensuring achievement of adequate safety, conformance to DOE-stipulated top-level safety standards and principles, and conformance to applicable laws and regulations (particularly as related to the effective control of the most significant identified hazards)

- Trends in Contractor safety performance evidenced by Contractor self-assessments, OSR inspections, and evaluated employee concerns (particularly as related to the effective control of the most significant identified hazards)

- The respective phase of the Contractor's program (design, construction, operations, and deactivation) and its associated activities (particularly as related to the effective control of the most significant identified hazards)

- Complexity of the significant hazards/events, approach to control these hazards/events, and implementation of the control approach (design, analysis, operation, etc.).

7.2.4 Routine Inspections

Inspection achieves credibility and predictability through periodic performance. The terms "credibility" and "predictability" each are defined generally in terms of objectives, scope, rationale, and schedule considerations. This set of routine inspections is selected such that periodic inspection coverage of key aspects of the Contractor's safety-related activities is ensured. The inspection areas for which routine inspections are performed during the design and

[49] NRC Inspection Manual, Chapter 2515, Section 2515-07.

construction phases are listed in Sections 8.1 and 8.2, respectively, of this IPD. The full set of routine inspections for the design phase is described in the IPIP. For subsequent phases, the routine inspections consist of a blend of inspections from previous phases and new inspections warranted by the applicable phase. The construction phase is unique in that it contains subset inspections for limited construction and pre-operational testing, which are not independent phases but do involve different regulatory oversight considerations. As a result, limited construction and pre-operational testing have independent listings of inspections that are part of the construction set of inspections.

7.2.5 Special Inspections

Inspection includes the provision to define, plan, prepare, and execute special inspections as needed to respond to circumstances that cannot be foreseen. Special inspections may be performed for a variety of reasons such as assessments of potential performance issues, verification of the corrective actions and their effectiveness for resolving previous findings, input to subsequent authorization actions, incidents, response to important new information, and investigations of compliance issues. These inspections involve planning and preparation activities similar to routine inspections.

7.2.6 On-location Inspectors

Inspection includes the provision for on-location inspectors who can perform follow-up inspections; limited-scope routine inspections; and elements of routine or special inspections involving witnessing of tests, observation of extended activities, or monitoring of equipment performance. This provision enhances the efficiency and effectiveness of the overall inspection function because of the unfettered access to the facility and the inspectors familiarity with details concerning operations, equipment status, current issues, etc.

7.2.7 Modularization

Inspection is modularized such that the inspection procedure integrates the inspection activities for a specific area. This facilitates efficiency and effectiveness of the inspection function by assigning skilled inspectors to focus on all inspection aspects associated with an inspection area.

7.3 Execution Elements

To accomplish inspection program objectives, specific elements are common to the execution of all inspections. These elements consist of inspection planning and scheduling, protocols, preparation, performance and evaluations, documentation, records, and tracking of items to final disposition. Each element is described briefly in this IPD and is defined further in the IPIP in terms of scope and rationale.

7.3.1 Planning and Scheduling

Consistent with the nature of the RPP-WTP Contract in which the Contractor provides the waste processing services to DOE, the OSR Inspection Program is executed in a planned, disciplined, and predictable manner. This is accomplished through appropriate planning, preparation, and performance of inspections. This section addresses the periodic planning and scheduling of the overall OSR Inspection Program to ensure that the overall set of planned inspections is appropriate and compatible with the ongoing schedule of the Contractor's activities.

7.3.2 Protocols

Use of established protocols will result in a planned, disciplined, and predictable OSR Inspection Program. These protocols provide a known process for conducting the inspection-related interactions between the OSR and the Contractor.

Information Requests	Arrange for key information related to a specific inspection to be made available to the OSR prior to the performance of that inspection (when deemed necessary and advantageous to the OSR).[50]
Briefing Requests	Arrange for key information related to a specific inspection to be made available to the OSR through Contractor briefings prior to or during the performance of that inspection (when deemed necessary and advantageous to the OSR).
Entrance Meeting	Arrange for and define the elements of the entrance meeting associated with each specific inspection to ensure that the Contractor's managers and key personnel are appropriately informed of the details of the inspection.[51]
Exit Meeting	Arrange for and define the elements of the exit meeting associated with each specific inspection to ensure that the Contractor's managers and key personnel are appropriately informed of the preliminary results of the inspection and the degree of cooperation experienced during the inspection.[52]

7.3.3 Preparation

Detailed inspection preparation is important to ensure that the OSR Inspection Program thoroughly and effectively evaluates project safety.

[50] NRC Inspection Manual, Chapter 0620, paragraph 04.01.
[51] Ibid, Procedure 35004, Section 02.04b.
[52] Ibid, Section 02.05.

Inspection Preparation	Ensures that OSR inspection personnel are fully knowledgeable of background information, relevant information previously submitted by the Contractor, detailed activity plans, applicable procedures, applicable protocols, and specific assignments/expectations for each inspection prior to its performance.

7.3.4 Performance

The performance aspects of inspection include the evaluations of (1) individual observations to determine if they qualify as Findings, (2) the significance of individual Findings, (3) trends among observations or Findings that provide a basis for conclusions about improvement or deterioration of Contractor safety-related performance in an inspection area, and (4) overall performance with emphasis on root causes of performance deterioration, if any.

Inspection Performance	Ensures that OSR inspections are conducted in accordance with the detailed activity plan for each specific inspection, but with flexibility to modify the plan during the inspection to better accomplish the inspection objectives or to follow up on situations that may involve imminent danger.
Screening Observations	Evaluate each individual observation to determine if its significance merits its designation as a concern or Finding.[53]
Significance of Findings	Evaluate each individual Finding to determine its relative significance as a basis for formulating appropriate conclusions and tailored responses.
Trend Assessments	Ensure that trends in performance data, if any, are delineated such that appropriate and timely corrective action responses can be formulated. The OSR Inspection Program can then be adjusted accordingly, and feedback to continuing evaluations of Findings can be provided.
Performance Assessments	Provide a basis for broad conclusions, if applicable, on the Contractor's continuing achievement of adequate safety, continuing conformance to DOE-stipulated top-level safety standards and principles, and continuing compliance to applicable laws and regulations.
Response Follow-up	Ensures that each Finding or open item is entered into a follow-up tracking system that tracks items until they are adequately resolved.

[53] Ibid, Sections 05.01 and 05.02.

7.3.5 Documentation

Accurate documentation of all aspects of an inspection is important because a formal regulatory record is required for all regulatory actions.[54] Therefore, for each inspection, a formal inspection report that contains all the necessary inspection-related information is prepared and issued. The inspection report may include the identification of issues requiring additional inspection follow-up, Findings requiring a Contractor response, and noncompliance issues that may be communicated to the DOE enforcement organization for further action.

Inspection Report	The inspection report documents the inspection activities performed, the OSR personnel involved, and the inspection observations, assessments, and Findings, if any.
Findings	Findings are formal notification to the Contractor of the identification of an inconsistency with a commitment in the authorization basis or an item that is not in compliance with a requirement in the SRD or applicable regulation. Findings are issued for the purpose of soliciting the Contractor's acceptance, corrective action plans, and self-initiated corrective actions, if any. Findings are communicated to the Contractor through documentation in inspection reports.
Inspection Follow-Up Items	Inspection follow-up items are issues requiring follow-up inspection because the issues are in the process of being resolved or the inspector requires further information from the Contractor or OSR to determine or verify their significance.
Potential Escalated Enforcement	For Findings of significant concern, the OSR may transmit the inspection information to the DOE enforcement organization for its consideration for escalation.

7.3.6 Records

Because inspection reports address official regulatory interaction with the Contractor, they are part of the regulatory record or docket. In addition, other associated documentation such as inspection-related correspondence, is also part of the official record and is docketed. These inspection-related regulatory records are docketed and archived in accordance with RL/REG-97-05, *Office of Safety Regulation Management Directives*, Management Directive 2.1, "Information Management."

[54] DOE/RL-96-25, Section 4, item 2.

7.3.7 Tracking

During the execution of the OSR Inspection Program, individual issues and Findings may be documented as items requiring follow-up inspection. In addition, Contractor-identified Incident Notification Reports, Construction Deficiency Reports, and other items may require inspection follow-up. To ensure final resolution of these issues over time, an inspection follow-up system (IFS) for tracking inspection items is necessary. In this section, the features of the tracking system are described.

IFS Records	Ensures that all IFS items identified during an inspection or by other means are uniquely identified and readily accessible.
Statusing	Ensures that the status of the resolution of IFS items is readily available.
Reports	Ensures that effective tracking reports are generated to provide the overall resolution status of all IFS items.

8.0 INSPECTION PROGRAM SUMMARIES

The inspection program for each phase (design, construction, operations, deactivation) of the RTP-WTP Project is summarized in terms of objectives that apply, bases for the inspections, specific approach, selected inspection procedures, and time frame. Each of these areas is addressed in considerably more detail in the IPIP.

8.1 Design

The design phase inspection objectives, basis, approach, procedures, and time frame are described in this section. Each inspection procedure is defined in terms of its objective.

8.1.1 Objectives

The objectives for the OSR Inspection Program are listed in Section 5.0. This section addresses only those program objectives that apply to the design phase. The context for inspection in the design phase is the Contractor's work during this phase and the safety relevance of that work. This work is primarily in four general areas:

1. Preliminary design activities related to maturing the design to the point at which it has been completely defined and fixed (point design).

2. Detailed design activities related to translating the point design to a level of detail at which it can be built to function as intended.

3. Procurement activities related to moving the design from the hands of the designers/engineers to the hands of the fabricators/constructors so that it can be built as intended.

4. Analysis and documentation of the expected safety performance of the design. Based on this Contractor work context, the following program objectives apply during the design phase (see Table 1). The rationale for this determination is also provided.

8.1.2 Basis

The documented, authoritative basis (regulatory expectations) for the inspections during the design phase and all subsequent phases originates from four sources. The first is the body of requirements that originates in applicable laws and regulations, but is applicable to the Contractor activities independent of the contract vehicle or the regulator. The second is the body of requirements that originates in the RPT-WTP Contract. The third is the body of requirements generated by the Contractor for the performance of its particular activities but formalized under the Contract. The fourth is the body of requirements that is, in effect, self-imposed through agreements (commitments) between the Contractor and the OSR. The sources of regulatory expectations that are applicable during the design phase are defined in the IPIP.

Table 1. Design Phase Program Objectives

Objective No.	Objective/Rationale	Applies
Objective 1	*To assess the Contractor's overall performance with regard to safety* This objective applies because the Contractor's performance in designing the systems and facilities to process the tank wastes is essential to achieving adequate safety during production operations and deactivation, when the hazards actually will exist. The means to assess the Contractor's overall performance during the design phase are provided in the OSR Inspection Program.	Yes
Objective 2	*To identify conditions that may adversely affect the safety of facility workers, co-located workers, Tribal Nations, or the public* This objective is primarily related to unsafe conditions that may arise during construction, pre-operational testing, operations, and deactivation and, therefore, does not apply during the design phase.	No

Objective 3	*To provide objective, independent evidence of the Contractor's continuing compliance with approved standards and requirements, conformance with top-level safety standards and principles, and fulfillment of commitments embodied in approved documents such as the ISMP* This objective applies because the Contractor is expected to develop the design pursuant to the approved standards and requirements in the SRD using management processes specified in its approved ISMP and QAP. The means to assess the Contractor's continuing compliance with approved standards and requirements, conformance with top-level safety standards and principles, and fulfillment of commitments embodied in approved documents such as the ISMP are provided in the OSR Inspection Program.	Yes
Objective 4	*To provide objective, independent evidence of the Contractor's implementation and fulfillment of authorization agreements* This objective is not applicable during the design phase because none of the Contractor's work during this phase is being performed pursuant to an authorization agreement. Objective 3 is an effective substitute for Objective 4 during the design phase.	No
Objective 5	*To provide objective, independent evidence that the Contractor is meeting the safety requirements of the Contract (requirements in the documents that define the regulatory approach) and the conditions of any OSR approvals* This objective applies because the Contractor is expected to develop the design pursuant to the requirements of the Contract and the conditions of any OSR approvals (may exist for the SRD, ISMP, RPP, and QAP). The means to assess whether the Contractor is meeting the safety requirements and conditions of specific OSR approvals during the design phase are provided in the OSR Inspection Program.	Yes
Objective 6	*To provide an objective, independent basis for ORP actions such as stop work, resumption of work, revocation of an authorization, or reinstatement of an authorization* This objective does apply because design work is performed under a formal authorization. The Contractor's design does have a direct bearing on public and worker safety and requires regulatory action if the safety is being compromised by failure to follow the Authorization Basis.	Yes
Objective 7	*To provide objective, independent input to OSR and/or ORP approvals, authorizations, and authorization amendments* This objective applies because the Contractor's work during this phase involves the development of the basis for the Construction Authorization Request (CAR) as well as the CAR itself. During the design phase, the means to generate objective, independent input to the ORP's decision on Authorization for Construction are provided in the OSR Inspection Program.	Yes

Objective 8	*To provide objective, independent verification that corrective actions and/or enforcement actions are being adequately implemented and are effective in correcting safety deficiencies or noncompliances* This objective applies because it provides a means to independently verify that corrective and/or enforcement actions are being adequately implemented and are effective in correcting safety deficiencies.	Yes
Objective 9	*To provide objective, independent verification of the integrity of the Contractor's safety-related documentation such as self-assessment reports, design descriptions, analyses, etc.* This objective applies because key safety-related documentation will be developed by the Contractor, including self-assessment reports; analysis reports in support of the CAR; design media (drawings, descriptions, specifications, etc.) in support of the CAR and procurement actions; and the CAR. The means to independently verify the integrity of the Contractor safety-related documentation during the design phase are provided in the OSR Inspection Program.	Yes
Objective 10	*To provide objective, independent verification that the Contractor's implementation and fulfillment of authorization agreements and OSR/ORP approvals (including any conditions contained therein), in combination with the Contractor's compliance with the safety requirements of the Contract, provide adequate radiological, nuclear, and process safety* This objective applies because the effectiveness of the Contractor's performance in designing the systems and facilities to process the tank wastes, and to do so with adequate safety, is essential to achieving adequate safety during production operations and deactivation when the hazards actually will exist. The means to independently verify the effectiveness of the Contractor's performance in providing adequate safety in the design are provided in the OSR Inspection Program.	Yes

8.1.3 Approach

The inspection approach during the design phase is based on the NRC's pre-construction permit inspection program.[55] This program is essentially a design phase inspection program for nuclear facilities that is focused on ensuring that a QA program is implemented and functioning for activities such as design, Preliminary Safety Analysis Report preparation, procurement, and construction under a limited work authorization. The approach for the OSR Inspection Program design phase inspections focuses on implementation, execution, and effectiveness of the Contractor's QAP. Additionally, the Contractor is expected to perform safety activities pursuant to the bases described in Section 8.1.2 above. The OSR Inspection Program also focuses on the Contractor's performance relative to this defined basis.

[55] NRC Inspection Manual, Chapter 2511.

The inspection approach during the design phase targets specific areas. The selected areas address safety aspects of the Contractor's activities during the design phase that are critical to developing a design that will accomplish the waste processing mission with adequate safety. Inspection procedures for the inspections are described in Section 8.1.4. Each procedure is pre-defined in terms of inspection objectives, scope, and approximate schedules. Each procedure is executed in accordance with the overall approach described in Section 7, which involves activities associated with planning and scheduling, preparing, performing, and documenting the inspections. Flexibility to respond to changes associated with the Contractor's work flow, maturing knowledge of the hazards and the means by which they will be controlled, maturation of the design, and changes in the Contractor's safety-related performance is exercised during the planning and preparation activities for the individual inspections. The approach also involves evaluation of special inspection needs that arise during the design phase but have not been identified and preplanned.

8.1.4 Inspection Procedures

In this section, the set of inspection procedures for the design phase of the OSR Inspection Program is listed and described in terms of the objective of each (see Table 2). For each procedure, the scope, rationale, bases, and schedule considerations are provided in the IPIP.

8.1.5 Schedule

Consistent with the purposes of the OSR Inspection Program delineated in Section 2, the inspections during the design phase are matched to performance of the Contractor's work. This ensures that Contractor performance is established or corrected, if necessary, before the work progresses to the point where substantial rework may be required, safety interests are challenged, and mission performance is degraded (schedule slippage and cost pressure). Inspections associated with each procedure are scheduled early in each major Contractor activity that has important safety-related aspects (e.g., preliminary design, CAR preparation, and procurement). The detailed schedule considerations for each procedure are described in the IPIP.

Table 2. Design Phase Inspection Procedure Objectives

Inspection Procedure	Objective
QA Implementation	Ascertain whether the Contractor's QAP, as it relates to the QA organization, is implemented and executed in an effective, structured, timely, and knowledgeable manner through adequate procedures as stipulated in the QAP for the design phase.[56]
Configuration Management	Ascertain whether the Contractor's configuration management program is implemented and executed in a structured, timely, and effective

[56] Ibid, Chapter 2511, paragraph 02.01

	manner as stipulated in the QAP and ISMP for the design phase.
Self-Assessment and Corrective Actions	Ascertain whether the Contractor's self-assessment and corrective action programs are implemented and executed in a structured, timely, and effective manner[57,58] as stipulated in the QAP and ISMP for the design phase.
SRD Design Standards Implementation	Ascertain whether the Contractor is properly implementing the safety standards stipulated in the SRD for the design phase.
Standards Process	Ascertain whether the Contractor is continuing to properly implement the DOE-stipulated process for safety standards selection (known as the 0004 process, DOE/RL-96-0004) during the design phase.
Qualified Personnel	Ascertain whether the Contractor is performing its safety-related activities with appropriately qualified personnel during the design phase.
Employee Concerns Program (ECP)	Ascertain whether the Contractor's ECP is effectively implemented and executed during the design phase.
Authorization Basis	Ascertain whether the Contractor is managing the authorization basis as required in the ISMP during the design phase.
Integrated Safety Management	Ascertain whether the Contractor is integrating safety management and implementing and executing effectively during the design phase.
as low as is reasonably achievable (ALARA) Program Assessment	Ascertain whether measures described in the Contractor's RPP and Radiological Controls Program are implemented to maintain radiation exposures ALARA in controlled areas through physical design features, and administrative control.

8.2 Construction

The construction phase inspection objectives, basis, approach, areas, and time frame are addressed in this section. The construction inspection program includes sets of inspection procedures that address oversight of limited construction, construction, and pre-operational testing activities.

8.2.1 Objectives

The objectives for the OSR Inspection Program are listed in Section 5.0. All inspection program objectives listed in Section 5.0 are relevant to construction phase activities.

8.2.2 Basis

See Section 8.1.2.

[57] Ibid, Chapter 0030, paragraph 05.09.
[58] Ibid, Chapter 2515, paragraph 02.02.

8.2.3 Approach

The inspection approach during the construction phase is based on the requirements in the LCAA or the CAA, as well as the Contractor's commitments in the associated authorization bases (such as, but not limited to, the SRD, ISMP, QAP, RPP, etc.). The inspection program focuses on verifying implementation of the Contractor's commitments in the ISMP and implementation of the committed standards identified in the SRD. The ISMP describes the safety management processes that will ensure an adequate level of safety for the workers and the public. The SRD describes the committed standards, which have been identified as a result of the DOE-stipulated standards identification process. The OSR inspection program verifies that the Contractor is effectively implementing the ISMP and the SRD, and that the Contractor's self-assessment programs described in the ISMP are functioning properly.

The OSR uses a modular inspection program. Within this modular approach, the OSR will perform inspection(s) prior to ORP granting a LCA. The inspection(s) will ensure that Contractor programs and procedures applicable to the authorized scope of limited construction (and subsequently for construction) activities have been appropriately developed and put in place. Other inspection procedures will be used for inspection in the field after the LCA (and subsequently the CAA) have been granted.

The inspection approach during limited construction (and later in construction) targets specific areas. The LCA inspection procedures address the assessment of construction activities defined in the LCAR. Inspection may include the review of such things as implementation of the ISMP relating to the activities associated with procurement and storage, engineering, and construction. Inspection areas are described in Section 8.2.4 for limited construction, Section 8.2.5 for construction, and Section 8.2.6 for pre-operational testing. These areas are based on the commitments made by the Contractor in authorization basis documents such as the SRD, QAP, and the ISMP. Inspection procedures associated with each inspection area are predefined in terms of inspection objectives, scope, and approximate schedules within the IPIP, and are executed in accordance with the overall approach described in Section 7.

8.2.4 Inspection Areas for Limited Construction

The set of inspection areas for conducting oversight of limited construction activities is based on the types of construction work authorized and the safety relevance of the work. Currently, the work during limited construction (in addition to continuation of the design and, therefore, continuation of the inspections listed previously in the design phase) is assumed to be in the following areas:

- Site grading and survey control
- Installation, testing, and temporary commissioning of portions of the underground firewater system
- Installation of duct banks for power

- Concrete batch plant installation
- First fabrication shops/laydown areas/changerooms
- Establishment of civil testing laboratory.

The inspection areas for limited construction are listed in Table 3 and are described in terms of the objective of each. For each area, the inspection procedures with their scope, rationale, basis, and schedule considerations are provided in the IPIP. For any given area, more than one procedure may be applicable depending on the level of complexity of the area. In addition, procedures designed to ensure work processes or special work processes may be modularized for periodic observation versus one-time assessments.

8.2.5 Inspection Areas for Construction

In this section, the construction-oriented inspection areas for the construction phase of the OSR Inspection Program are listed and described in terms of the objective of each (see Table 4). For each inspection area, inspection procedures are described in the IPIP in terms of scope, rationale, basis, and schedule considerations. For any given area, more than one procedure may be applicable depending on the level of complexity of the area. In addition, procedures designed to ensure work processes or special work processes may be modularized for periodic observations versus one-time assessments.

The set of inspection areas for assessing construction phase activities is based on the types of construction work authorized and the safety relevance of the work.

8.2.6 Inspection Areas for Pre-Operational Testing

Specific details of the inspection areas for the pre-operational testing program will be developed and reflected in a future revision.

Table 3. Inspection Areas for Limited Construction

Inspection Area	Objective
Readiness to Proceed with LCA	Ascertain whether the Contractor's programs and procedures are ready for entry to the limited construction portion of the construction phase.
QA Implementation	Ascertain whether the Contractor's QA commitments in the QAP and 10 CFR 830 Subpart A are implemented in support of limited construction, including such things as procurement, receipt and inspection, configuration management, self-assessment and corrective actions, and other QA areas pertinent to LCA. Each topic may be a separate procedure.
Limited Construction Work and Special Work Processes	Ascertain whether the Contractor's construction work processes (such as excavation and backfill, structural, concrete, soil testing,

	etc.) associated with the limited construction application are implemented in an effective manner through adequate procedures under the control of the QAP for limited construction. In addition, this area will cover special work processes such as non-destructive examination (NDE).
Employee Concerns Program	Ascertain whether the Contractor's ECP is implemented effectively during limited construction (performed if necessary).
Radiation Protection	Ascertain whether measures described in the RPP and Radiological Controls Program are implemented to maintain worker and public radiation exposure ALARA.

8.2.7 Schedule

The construction phase inspection program will include two elements. The first concerns the review of program procedures to ensure they are sufficiently in place for ORP to grant authorization to proceed. The second element considers oversight of work performance after authority to proceed has been granted. Consistent with the purposes of the OSR Inspection Program delineated in Section 2 the inspections during limited construction/construction are matched to the flow of the Contractor's work. This ensures that Contractor performance is established or corrected, if necessary, before the work progresses to the point where substantial rework may be required, safety interests are challenged, or mission performance is degraded (schedule slippage and cost pressure). Inspections are scheduled in each major Contractor activity that has important-to-safety aspects. Schedule considerations for each procedure are described in the IPIP.

Table 4. Inspection Areas for Construction

Inspection Area	Objective
Readiness to Proceed with CAA	Ascertain whether the Contractor's programs and procedures are ready for entry to the construction portion of the construction phase. This procedure may or may not be performed based on the scope and results of the readiness to proceed with LCA.
QA Implementation	Ascertain whether the Contractor's commitments in the QAP and 10 CFR 830 Subpart A are implemented in approved procedures. This effort will specifically address all ten aspects of QA (as defined in 10 CFR 830.120) as they apply to the construction phase through individual procedures.
Employee Concerns Program	Ascertain whether the Contractor's ECP is implemented effectively during construction. (The decision to perform this inspection will be based on past performance.)
Construction and Special Work Processes	Ascertain whether the Contractor's construction work processes (i.e., civil, electrical, mechanical, and instrumentation) and special work processes (such as NDE, welding, instrumentation calibration) associated with the construction application are implemented effectively through adequate procedures under the control of the QAP during the

	construction effort. The IPIP will define individual procedures in this area.
Radiation Protection	Ascertain whether measures described in the Contractor's RPP and Radiological Controls Program are implemented to maintain worker and public radiation exposure ALARA.
Safety Integration	Ascertain whether the Contractor is integrating safety management and implementing and executing effectively during the construction phase.

8.3 Production Operations

The elements of the OSR Inspection Program appropriate to the production operations phase will be developed and issued in a revised IPD prior to initiation of the production operations phase. These elements will be tailored to the activities associated with this phase and the safety significance of these activities. The inspections will focus on ensuring that Contractor performance is consistent with the approved Operating Authorization Basis, the current QAP, the current ISMP, the conditions of the Operating Authorization Agreement, and any other Contractor commitments or agreements between the Contractor and the OSR/ORP that are relevant to Contractor performance during this phase.

8.4 Deactivation

The elements of the OSR Inspection Program appropriate to the deactivation phase will be developed and issued in a revised IPD prior to initiation of the deactivation phase. These elements will be tailored to the activities associated with this phase and the safety significance of these activities. The inspections will focus on ensuring that Contractor performance is consistent with the approved Deactivation Authorization Basis, the current QAP, the current ISMP, the conditions of the Deactivation Authorization Agreement, and any other Contractor commitments to the OSR/ORP and agreements between the Contractor and the OSR that are relevant to Contractor performance during this phase.

9.0 DEFINITIONS

authorization basis - The composite of information provided by a Contractor in response to radiological, nuclear, and process safety requirements that is the basis on which the DOE grants the Contractor permission to perform regulated activities.

Finding – When the performance of the Contractor or a supplier to a Contractor is not consistent with the commitments in the authorization basis, or in compliance with the requirements in the Contract, SRD, or applicable regulations.

Important to Safety – Systems, structures, and components (SSCs) that serve to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of workers and the public. Important to safety includes SSCs that perform safety functions and traditionally have been classified as safety class, safety-related, or safety-grade and those that

place frequent demands on or can adversely affect the performance of safety functions if they fail or malfunction (i.e., support systems, subsystems, or components). These latter SSCs would be subject to applicable top-level radiological, nuclear and process safety standards and principles to a degree commensurate with their contribution to risk.

10.0 REFERENCES

10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.

Administrative Procedures Act, as amended (5 USC 551 et seq.).

DOE/RL-96-0003, *DOE Process for Radiological, Nuclear, And Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

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DOE/RL-96-0005, *Concept of the DOE Process for Radiological, Nuclear, And Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the River Protection Project Waste Treatment Plant Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

DOE/RL-96-25, *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*, Rev. 1, U.S. Department of Energy, Office of River Protection, 2001.

DOE/RL-96-26, *Memorandum of Agreement for the Execution of Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor*, Rev. 1, U.S. Department of Energy, Office of River Protection, 2001.

Federal Acquisition Regulations, Section 52.246-4.

Integrated Safety Management Plan (ISMP), BNFL-5193-ISP-01, Rev. 5, Bechtel National, Inc., Richland, Washington, 2001.

RL/REG-97-05, *Office of Safety Regulation Management Directives*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

MD 2.1, "Information Management"

RL/REG-98-24, *Inspection Program Implementation Plan for the Regulatory Oversight of RPP-WTP Contractor*, Rev. 2, U.S. Department of Energy, Office of River Protection, 2001.

Safety Requirements Document (SRD), BNFL-5193-SRD-01, Volumes I and II, Rev. 3, Bechtel National, Inc., Richland, Washington, 2001.

11.0 LIST OF TERMS

ALARA	as low as is reasonably achievable
CAA	Construction Authorization Agreement
CAR	Construction Authorization Request
DAA	Deactivation Authorization Agreement
DAR	Deactivation Authorization Request
DOE	U.S. Department of Energy
ECP	Employee Concerns Program
IFS	Inspection follow-up System
IPD	Inspection Program Description
IPIP	Inspection Program Implementation Plan
ISMP	Integrated Safety Management Plan
LCA	Limited Construction Authorization
LCAA	Limited Construction Authorization Agreement
LCAR	Limited Construction Authorization Request
NDE	non-destructive examination
NRC	U.S. Nuclear Regulatory Commission
OAA	Operations Authorization Agreement
OAR	Operations Authorization Request
ORP	Office of River Protection
OSR	Office of Safety Regulation
QA	quality assurance
QAP	Quality Assurance Program
RPP	Radiation Protection Program
RPP-WTP	River Protection Project Waste Treatment Plant
SRO	Safety Regulation Official
SRD	Safety Requirements Document

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